for the last three weeks Dr. Busch of Berlin, who is making a scientific tour of Great Britain, with a view of pursuing anatomical researches among our marine animals. He left for Dublin last night. His microscope was a magnificent machine. I availed myself of its powers, and placed the bivalves under its magic influence. The sight was delightful. I could see the ingress of water into the anterior siphon of $K$. suborbicularis and K. rubra, the ejectment of fæces from both distinctly. The alternate spasmodic action and forcing of water through the anterior tube of $K$. suborbicularis free of any admixture was distinctly seen. The power employed was very great. The animal, one that had been in confinement for some time. This creature was removed from the field and a K. rubra substituted; the same power being employed. The anterior siphon was in constant motion; and the water, crustacea, and minute atoms floating on its surface were distinctly seen to enter it: no regurgitation took place anteriorly. I kept my eye to the instrument watching the creature's movement until my retina was nearly paralysed, without detecting the "placid stream." I have daily during the last six weeks examined a score of K. rubra, both recent specimens and old prisoners, with lenses of different powers,--employed various contrivances with compound mirrors, lenses, \&c., without detecting the current of water passing out of its anterior siphon.

Believe me, my dear Sir, yours very truly,

> J. Alder, Esq. W. P. Cocks.

## PROCEEDINGS OF LEARNED SOCIETIES.

## ZOOLOGICAL SOCIETY.

June 13, 1848.-Harpur Gamble, Esq., M.D., in the Chair.

> 3. Description of new species of the genus Cyprea. By J. S. Gaskoin, Esq.

1. Cyprea Thersites (High-backed Cowrie). Cyp. testa ovata, gibbosd, dorso elevato, basi latd plandque, saturatè rufescente-fuscd; anticè posticèque depressiusculd, aperturd angustatd, posticè recurva; dentibus albis, distinctis, labii externi validis, columellari minùs prominentibus; sulco columellari anticè profundo, lato; extremitatibus valdè productis, canali antico pleno.
Shell ovate, very gibbous and high-backed, of a very dark, reddishbrown colour, not uniformly equal in intensity; a curved whitish mark exists over both the anterior and the posterior extremities, at which places there is a depression, as though the mantle had not. deposited any substance there after it had begun to secrete the colouring-matter, particularly that at the last whorl of the spire;
aperture narrow, much curved at the posterior third of its length, the other two-thirds nearly straight; teeth white, distinct, even, about twenty-seven on the outer side, extending but slightly over the lip; on the columellar side about twenty-four, broader at the anterior end, while along the continued edge of the aperture to its posterior extremity are mere indications of teeth; columellar sulcus deep and broad, not extending beyond the more prominent teeth; base broad and flat, its entire circumference of an uniform dark, reddish-brown colour, or spots of a similar colour, the colour lessening in intensity towards the middle portion of the base, which is white, as is also the interior of the shell ; margins project, especially that of the lip : extremities produced, the posterior forming sharp or thin edges, and extending much upwards; that on the columellar side terminating at the apex of the spire; the anterior extremities also thin, and the channel upright.

I have seen this shell only in the adult state. It has no general characteristic in common with any known species; the extremities however have much similitude to Cypraa Scottii; but it is a much shorter, more gibbous, heavier and thicker shell.

Long, $2 \frac{75}{100}$ inches; high, $1 \frac{50}{100}$; wide, 2.
Hab. - ?
Cabinets of Britislı Museum, Saul, Cuming, \&c.
2. Cyprea marginata (Broad-margined Cowrie). Cyp.testa ovatd, anticè subacuminata, posticè et medianè valdè gibbosd; colore floris lactis, maculis fulvis, paucis irregulariter sparsis; basi valdè plana et latd ; marginibus externis medianè fulvo-brunneo punctatis, punctis discretis ; apertura latd, subspirali; columelld posticè gibbosa, sulco parvo antico; dentibus lateris columellaris circa viginti, latè distinctis; lateris externi aqualibus paululùm extensis, anticè minoribus, circa viginti-novem; extremitatibus, posticd productd, pland, canalem latam sursum formante, antica minùs producta, convergente, canalem brevem sursum formante; spirâ valdè conspicud; murginibus planis, tenuibus, valdè extensis.
Shell ovate, anterior end rather pointed, the posterior and middle very gibbous; of a cream-colour, a few fulvous spots are irregularly scattered over the entire back and sides of the shell, apparently the commencement of the deposition of colouring-matter; base flat and very broad, on the outer edges are discrete fulvous brown spots, the rest of the base, the teeth, and the interior of the shell are of a clear cream-colour ; aperture wide, spiral ; columella gibbous posteriorly, a slight sulcus at the anterior end; teeth form, on the columellar side, a single angular serrated edge, about twenty in number, wide apart and not very prominent; on the other side they are more regular and even, extending, slightly prominent, half across the lip; they are smaller and more perfect towards the anterior extremity, and about twenty-nine in number; the extremities are produced, flat, form a broad channel, passing upwards at the posterior end of the shell, and terminate at the outer side of the apex of the spire; the anterior extremities are much less produced, and converge, forming a
short channel running upwards; spire very prominent; margins flat and thin, extending much outwards; the angle formed by the attachment of the outer margin to the shell is of a light brown colour, from which anteriorly radiate lines of the same colour over the upper surface of the margin.

Differs from Cyp. Scottii in its short and gibbous furm, in the remarkable flat and broad cream-coloured base, in the very extended, flat and thin margins: the posterior channel has much the form of that of Scottii, but terminates at the apex, and not, as in Scottii, at the base of the spire.

Length, $2 \frac{25}{100}$ inches; altitude, $1 \frac{20}{100}$; breadth, $1 \frac{50}{100}$.
Hab . ?
The only specimen I have seen of this peculiar shell is in the British Museum, and may not be an adult.
3. Cyprea bicolor (Two-coloured Cowrie). Cyp.testd pyriformi, colore floris lactis; fasciis latis, interruptis, brunneis, centrali latiori ; basi latiusculd, rotundatâ ; apertura subspirali, latiusculd; dentibus numerosis, prominentiusculis, columellaribus crassis, supra sulcum columellarem extensis; margine externo crasso, punctato, punctis brunneis discretis ; extremitatibus brevibus, obtusis; canali antico pallidè rufescente-flavo.
Shell pyriform, when young more ovate, smooth and shining ; of a light cream-colour, having three broad, irregularly interrupted bands of a brown or fawn colour, extending entirely across the shell, the middle one being the broadest, the posterior the next so; base broad, rather convex, pale cream-colour; aperture subspiral, rather wide; teeth numerous, rather prominent, on the lip about thirty curving round its edge, and extending about one-third over the lip; on the columellar side teeth about seventeen, extending from the edge of the aperture over the columellar groove to end on its inner ridge, diminishing on that ridge in prominence towards the posterior extremity, where the denticulation is scarcely observable; the columellar groove of equal width the whole length ; margin, external very thick and prominent (not crenulated), somewhat angular at its outer edge, along which are many small brown distinct spots; similarly coloured spots, but a little larger, are also on the columellar side, where a slight margin exists, and which becomes prominent only to form the anterior extremity ; extremities short, obtuse ; the anterior channel has a very faint orange tinge.

Long, $\frac{90}{100}$ ths of an inch; high, $\frac{55}{100}$ ths; wide, $\frac{55}{100}$ ths.
Hab. Australia, New Holland.
Cabinets of Metcalfe, Saul, Gaskoin.
Differs from the Cyp.piperita of Gray in not being cylindrical, but of a pyriform shape ; in being very gibbous, and a much heavier and thicker shell ; in having only three bands, which are very broad and conspicuous; Cyp. piperita having four, which are generally narrow and obscurely visible in the adult shell, and on the later-formed part of the shell uninterrupted.
4. Cyprea gracilis (Slender Cowrie). Cyp.testd oblongo-ovatd, anticè gradatim acuminata, pallidè flavescente-brunned, maculis dorsalibus irregularibus pallidè brunneis, lateribus basalibus brunneo punctatis, punctis paucis distinctis; basi pallescente ; latere postico columellari subgibboso; apertura latiusculd, subspirali; dentibus labii externi prominentibus aqualibus, circa octodecim, labii columellaris aqualibus, anticis paululùm majoribus, pariter circa octodecim; sulco columellari antico depresso, postico inconspicuo depresso; extremitatibus canalibus latisque prominentibus; spird conspicud, profundè umbilicatá.
Shell oblongo-ovate, gradually tapering towards the anterior end, smooth and shining, of a light fawn-colour, with very light brown irregular markings about the back, and a few distinct dark brown dots on the edges of the base of the shell on both sides, bands indistinct; inside of shell milk-white; base somewhat lighter in colour than the back; posterior half of the columellar side rather gibbous, outer side of base somewhat depressed in the centre portion; aperture subspiral, rather wide; teeth of the lip prominent and even, extending in no degree on to the lip (only denticulating its edge), about eighteen in number, and about as many also on the columellar side, which are larger anteriorly, even, terminating externally in a line at the edge of, or rather just within the aperture, and internally, proceeding straight across the columellar groove to terminate at its inner edge the anterior half of the shell, and on the columella in points, the posterior half, there being mere small projections indicating the continuance of the inner edge of the columellar groove, which extends the whole length of the columella, diminishing in depth in the middle of the shell, and deepening at the posterior end to form a part of the channel ; margins slightly prominent, thick on the outer side only, not crenulated; extremities of a light brown colour externally, much produced and thick; both the anterior are marginated and flattened externally; channels wide and protrude beyond the body of the shell ; spire visible, deeply umbilicated.

Long, $\frac{86}{100}$ ths of an inch; wide, $\frac{50}{100}$ ths; high, $\frac{40}{100}$ ths.
$H a b$.
The only specimen I have seen of this elegant shell is in my collection, and was brought to this country by Sir E. Belcher in the ' Samarang.'

The only species with which this shell has any affinity is the Cyp. Sauli of Gaskoin; and differs from it in the teeth being finer, and in being rather within the aperture, in having a columellar groove, in the absence of colour between the teeth, in being more ventricose, the wanting the characteristic dark blotch on the dorsum of Sauli, and difference of general coloration.
I have thought it proper to add to this description the following note: -
"My dear Sir,-I have carefully examined the little Cypræa which you left with me yesterday, and which you proposed to name Cyp. gracilis. It appears to me to be in perfect condition, and to
possess several characters by which it is most easily distinguished from all other described species with which I am acquainted.
" In its teeth, which are not elongated over the columellar side, in the internal columellar groove, in its apical umbilicus, and in the much-produced posterior extremities, as well as in other characters, it differs essentially from Cyp. Walkeri of Gray; and it has not the slightest appearance of malformation or monstrosity of form. I am therefore of opinion it is a perfectly distinct species, and ought to be described as such.
"Yours, \&c.,

> "G. B. Sowerby."
" 30th March, 1848."
"To J. S. Gaskoin, Esq."
5. Cypraa obscura (Dusky Cowrie). Cyp. testa ovata, albicante, maculis duabus dorsalibus nigricantibus inconspicuis; costellis rudibus, prominentibus, ad dorsum concoloribus, ad margines et ad basin albis; dentibus labii externi circa viginti, labii interni distantibus circa duodecim; sulco columellari lato, margine interno dentibus serrato ; extremitatibus albis, crassis, productiusculis.
Shell ovate, of a dingy white culour, having two remarkable small, blackish, undefined spots or markings on the dorsum, one a little less than a third the length of the shell from each extremity ; ribs coarse and prominent, on the back of the same colour as the shell, but on the margins and base of a pure white; they traverse the shell from one side of the aperture to the other, having a slight curving at the centre of the dorsum ; on the outer side several terminate on the side of the shell, fewer terminate on the columellar side, where some float; base white, rather round ; aperture straightish, curved at the posterior end, rather narrow ; teeth even, formed by the costæ, about twenty on the lip and about twelve on the columellar side, where they are distant and extend over a broad columellar groove to serrate its inner ridge ; margin on the outer side thick and white, none on the columellar side; extremities white, thick, and somewhat produced. No dorsal impression.

Length, $\frac{36}{100}$ ths of an inch ; altitude, $\frac{20}{100}$ ths; breadth, $\frac{25}{100}$ ths.
Hab. North-west Australia; Dupuch's 1sland (under stones, low water), collected by J. E. Dring, Esq., R.N. Abrolhos Island (under coral), by ditto.

Cabinets of Gaskoin, Saul, \&c.
This shell is perhaps nearest in form to Cypraa pulex, Gray, but cannot be confounded with any known species. I have had for several years specimens of this shell, and the locality given me with them was Senegal ; but as Mr. Dring has lately brought others to this country, I have thought it right to give so authenticated a habitat as we have received from him.

This manuscript description having been written for a few years, I send it for insertion in the 'Proceedings,' although Kiener appears to have described it in his work, 'Spécies Général,' \&c., under the name of Cyp. Napolina, a name ascribed to Duclos; but Kiener does not say by what authority, yet I conclude that that appellation should stand. Kiener's figures, pl. 53, figs. 3 and 3, are no repre-
sentations of his description. I was not aware until lately that this shell had already been described, but my English characters of the species may not be unacceptable, as they are more minute.
6. Cyprea sulcata (Grooved Cowry). Cyp. test ovato-globosa, ventricosa, albd; basi rotundata, apertura latiusculd, posticè in. curva, canalibus profundis et latis; dentibus aqualibus, labii externi circa triginta, lateris columellaris viginti, supra columellam continuis marginem internam serratam formantibus; costellis prominentibus plerumque ad impressionem dorsalem terminantibus, pseudo-costellis ad utramque extremitatem circa decem; sulco columellari lato, profundo, margine externo prominente, acuto; extremitatibus obtusis, crassis; spirâ conspicud; impressione dorsali conspicua.
Shell globoso-ovate, ventricose; entirely of a clear white colour; base convex, aperture rather wide, curved inwards at the posterior end, channels deep and broad; teeth numerous and even, about thirty on the lip and twenty on the columellar side, which traverse the columellar groove to terminate at an inner serrated edge; the ribs are continuations of the teeth, are prominent, and almost all terminate at the dorsal impression, a few only on the sides of the shell; false ribs at each end about ten, interstices between the ribs minutely striated longitudinally; columellar sulcus broad and deep, the outer edge, sharp and prominent, occupies the anterior third of the length of the columella, the other portion of the inner part of the columella flat (not grooved); extremities obtuse, thick, those of the lip longer than the body of the shell, the posterior one in a marked degree, which, passing round to form the channel, ends somewhat abruptly in a prominent sharp edge on the columella, which sharp edge constitutes the inner extremity; spire perceptible, the false ribs pass over it; dorsal impression well-pronounced, extends the length of the back to the false ribs at each end; margins none.

It is nearest in general form to Cyp. formosa of Gaskoin, but differs from it in having a dorsal impression, much coarser ribs, in the sharp outer edge of the columellar sulcus, the peculiar position and form of the inner and projection of the outer posterior extremities, in its pure white colour, \&c.

Hab. Manilla.
Length, $\frac{45}{100}$ ths of an inch; width, $\frac{32}{100}$ ths; height, $\frac{30}{100}$ ths.
Cabinets of Gaskoin, Cuming.
7. Cyprea vitrea (Glass-like Cowry). Cyp. testá ovato-globosa, alba, nitida, semivitred; busi rotundata, aperturâ angustiori paululìm incurva, marginibus crassis; dentibus equalibus, numerosis, prominentibus, labii externi circa triginta, columellaris viginti supra sulcum columellarem continuis; sulco columellari lato, longitudinem aperture equante, margine interno subrecto, serrato; costis magnis, equalibus, prominentibus, cum dentibus continuis ad dorsum terminantibus; linea dorsali impressa; extremitatibus obtusis, crassis brevibus; margine externo crasso; spird inconspicud.

Shell ovato-globose, almost round, of an uniform, semivitreous, shining, white appearance; base convex, aperture rather narrow, slightly curved inwards its whole length, edges thick; teeth even, rather thick, prominent, about thirty on the lip and twenty on the columellar side, where they traverse the columellar groove and serrate its nearly straight inner edge; the groove is broad and very shallow, and nearly equal in width and depth the whole length of the aperture; the teeth continue to form the ribs, which are large, even and prominent, and terminate at the dorsal impression, with the exception of two or three on each side ; the false ribs all form denticulations; dorsal line impressed, extending from the apices formed by the joining of the false ribs ; extremities obtuse, thick and short; margin very thick, none on the inner side; spire not perceptible in the adult shell, being thickly covered by the false ribs.
Hab. Philippines.
Length, $\frac{25}{100}$ ths of an inch ; width, $\frac{21}{100}$ ths; height, $\frac{20}{100}$ ths.
Differs from Cyprea globosa of Gray in the anterior extremities being of an equal length, aperture much narrower and less curved, base rounder, its semivitreous shining appearance, \&c.

Cabinet of Gaskoin.
8. Cyprea grando (Hail-stone Cowry). Cyp. testd ovato-globosd, nitidd, nived; basi rotundatd, sine varice; aperturd latiusculd anticè latiori, subspirali ; sulco columellari longitudinem columelle aquante, lato et profundo; dentibus minimis, aqualibus, labii circa quadraginta-octo, columella circa triginta-quatuor; costellis tenuibus et aqualibus, e dentibus continuis; interstitiis longitudinaliter tenuiterque crenulatis; lined dorsali impress ; extremitate posticd valdè productd; spird prominente et flavescente.
Shell ovato-globose, shining, of a clear snow-white colour ; base round, being a continued convexity with the body of the shell, there being no margin on either side ; aperture widest at its anterior half, rather wide generally; the columellar side spiral, edge of the lip but very slightly so; columellar groove extends the entirc length of the columella, and is continuous at both ends with the channels ; it is broad and deep, particularly at the anterior half; its outer and inner edges spiral, the outer edge angular and somewhat projecting; teeth very minute, numerous and even, about forty-eight on the lip, and about thirty-four on the columellar side, which traverse the columellar groove to notch its inner edge ; the ribs delicate and even, and are continuations from the teeth; many terminate on the sides of the shell (the teeth being so numerous, the outer portion could not contain their prolongation), the rest end mostly in fine points at the dorsal impression, alternately from either side; a few are united with those of the opposite side; interstices between the ribs finely crenulated longitudinally ; dorsal line impressed ; extremities, the anterior very slightly, the posterior much produced; spire prominent and tinged with a light yellow colour; margins none.
This shell differs from the Cypraa vitrea, just described, in the minuteness and number of the teeth and delicacy of the ribs; in the
unequal width of the aperture, and the spiral form of its inner side; in the broad, deep and unequally wide columellar groove, prominent apex, absence of margin, \&c.

Length, $\frac{26}{100}$ ths of an inch; width, $\frac{20}{100}$ ths; height, $\frac{19}{100}$ ths.
Hab. Manilla.
Cabinet of Gaskoin.
9. Cypree flaveole, varietas labro-lineata. Cypraa flaveola varietas, lineis brunneis e dentibus labii externi supra basin continuis.
Shell same form and size as Cyp. flaveola: differs from it in being much paler in colour, and the white dottings are therefore less conspicuous; in the teeth being smaller and more numerous, and in there being elevated lines of a brown colour on the lip, continued from each tooth, and at the anterior end projecting beyond the margin ; in the anterior teeth of the columellar side being bifurcated, and in the dark brown dottings of the margins being more numerous, and extending a little on to the base.

Cabinets of Cuming, Saul.
Hab. - ?
10. Cypree quadrimaculate, Gray-varietas pallidula (Palish Cowry). Cyp. sine maculis nigris; dentibus lateris columellari majoribus, prominentioribus et paucioribus; labii minoribus et numerosioribus ; basi nitente.
This shell possesses characters, especially in colouring and general form, much in common with the former shell, but is destitute of the large black spots on the outsides of the extremities and on the spire; there is in some individuals a thin dark line across the outer surface of the anterior channel; the teeth on the columellar side are larger, more prominent, more even, and fewer in number ; while those on the lip are smaller and more numerous; it never attains the size of quadrimaculata, the teeth and base of which are always dull, while those of the variety are always polished (shining).
11. Cyprea pulla.-The small "Trivia" I described under that appellation (Proc. Zool. Soc., March 10, 1846), I am enabled now to state the habitat of;--the Galapagos Islands, and the Bay of Guayaquil ; Cuming. When I named this shell "pulla," I was not aware it was a synonym of Cyprcea adusta of Chemnitz and Lamarck, by Gmelin,-Cyp. onyx of Gray; but as Chemnitz's name " adusta" was the prior, and therefore the proper one, I do not consider it necessary to alter mine.
12. Cyprea pulicaria.-Reeve, in his description of this shell (Proc. Zool. Soc., March 10, 1846), remarks, that it differs from Cyp. piperita of Gray in not being banded; but most of the specimens that I have seen have four distinet, narrow, interrupted, light brown bands, nearly equidistant. Nine individuals, of thirteen in my collection, have these four very conspicuous bands; that described by Reeve was one of the remaining four shells whose bands are covered. I will take the liberty to add to the distinctions from Cyp. piperita, the broad and projecting sulcus at the anterior portion of the co-
lumellar groove; and the convergence of the anterior extremities, rendering the channel so much narrower than in piperita.
13. Cyprea nivea.-The shell described under that appellation by Gray, the original type of which, pierced with its two holes, is now before me, is a white variety of Cypraa turdus:-vide Gray's Monograph (Zool. Jour. i. 511). The figures, however, of Cypraa nivea of Gray, in Sowerby's Conch. Illus. and in Reeve's Conch. Iconica, are representations of the Cyprea oryza of Gray (Zool. Jour. iii. 369) ; this same error seems to pervade in the arrangement of most of the collections I have seen. The Cypraa nivea figured in Wood's Supplement to the Index Testaceol, is a young Cyp. Humphreysii of Gray.
14. Cyprea Pronucta.-I am able at length to refer conchologists to other specimens of this species than that described by me December 22, 1836, in these 'Proceedings,' which have been brought to this country by Capt. Sir Edward Belcher, and collected during the voyage of H.M.S. the Samarang. They are distributed into the cabinets of Miss Saul, Messrs. Cuming, Gaskoin, \&c. The original shell, the type of this species, is well-represented in Sowerby's Conchological Illustrations, fig. 155 ; in Reeve's Conchologia Iconica, pl. 24, fig. 137 ; and in Kiener's Spécies Général, et Iconographie des Coquilles vivantes, fol. 53 , figs. 5 and 5 :-this last is copied from Sowerby.

## June 27.-William Yarrell, Esq., V.P., in the Chair.

## 1. On the Habits of Cyclura lophoma, an Iguaniform Lizard.

 By P. H. Gosse.The subject of the present paper seems to be as yet unknown to science ; it may be thus described :-

Cyclura lophoma, mihi-( $\lambda$ ó $\phi o s$, a crest, and ${ }^{\boldsymbol{\omega}} \mu \boldsymbol{\mu}$, the shoulder). Shields on the muzzle separated by small scales; muzzle with four many-sided, convex, unkeeled plates on each side, the anterior and posterior very large, the intervening two smaller, short, but wide. General head-shields irregular in size, a largish one near the middle of the head; lower jaw with one (posteriorly two) series of large, rhomboidal, keeled plates, with none between them and the labial plates. Dorsal crest high, continuous over the shoulders, interrupted over the loins.
Length about 3 feet, of which the tail measures 21 inches. Colour (in a dried state) greenish-grey, with obscure blackish spots, confluent, so as to form a rude reticulation.

This very distinct species may be at once recognised by the number, form and arrangement of the plates of the muzzle, and particularly by the serrated crest not being interrupted over the shoulders. I have never met with it alive in Jamaica; the specimen from which the above description is taken, now in the British Museum, was one of many zoological treasures presented to me by my kind and valued friend, Richard Hill, Esq., of Spanish-town. It is to the same gentleman that I am indebted for the whole information, concerning the
economy of this Saurian, which I now submit to the Zoological Society.

The following memoir from the pen of my friend was communieated to me in the beginning of the year 1846; the animal, though spoken of by the name Iguana, is the identical specimen above described, and which Mr. Hill had noticed to differ from I. tuberculata by its lacking the dentelations on the gular pouch.
" Our Iguana is considered to be entirely herbivorous. It is found only in particular parts of the island. The low limestone chain of hills, along the shore from Kingston Harbour and Goat Island, on to its continuation in Vere, is its ordinary haunt; and it is not unfrequently taken in the plains between those sea-coast hills and the more inland mountains, being found in hollow trees in the pastures, where they congregate, several of them together.
"The labourers in clearing and burning off some of the savannas between Spanish-town and Passage-fort the other day (March 1844), surprised in a hollow bastard-cedar tree (Guazuma ulmifolia) some five Iguanas of the largest size. The one I sketched measured fortyfive inches long, and it was said not to have been the largest. It was extremely fat and muscular. A russet-green, here and there graduating into slaty-blue, is the general colour of the body and limbs; some oblique lines of dark olive-green are traceable on the shoulders, and three broad dark triangular patches descend from the dentelations of the back down to the belly, with zigzag spots of dark olive-brown dispersed about. At very regular intervals, the tail is alternately of a lighter and darker olive-green. A bluishgreen colour, more decided than on the body, prevails in the dentelations of the back, and on the legs. . . . . .
"Succulent herbs, growing in the forests of the limestone hills I have referred to, supply food for the Iguana. These hills, however, are so little suited for this sort of vegetation, that hardly anything more than aromatic and resinous trees and balsamic plants grow there. The lignum-vitæ (Guaiacum), the Acacia nilotica, and cactoid plants,-particularly the torch and melon thistles (Cactus repandus et peruvianus, et Cactus melocactus),-the lantana, and the varronia, with many balmy mallows (Sida althaifolia, urens, capillaris, et viscosa), and the vervain (Stachytarpheta), seem to comprise almost the whole catalogue of trees, shrubs and herbs. These hills are, however, inhabited by several domestic animals, which have run wild. Goats and hogs, derived from the common domestic breeds, have become feral; and even the common domestic poultry, cocks and hens, have taken to the woods as jungle-fowl, with the pintado. Quails and doves find here a safe breeding-place. These hills are also the special resort of the musteline thrush, the wood-thrush of the North Americans, which more than divides with the mockingbird the credit of a songster. It has a louder and more brilliant note, though its song be greatly less varied and melodious. The fruit of the torch-thistle seems the great attraction of the woodthrush, but it is not easy to perceive the resource of the granivorous birds. The aromatic herbs suit the wild goats; but the hogs can Ann. \& Mag. N. Hist. Ser. 2. Vol. iv.
find but few edible roots among rocks, but very thinly interspersed with soil. In the occasional hollows a little mould has been collected from decayed leaves, mingled with marl, extremely stony and sterile; and here a little more succulent herbage may prevail, and a few of the edible roots of the country may be found growing. The rocks have numerous caverns, and the springs that break out at the foot of the cliffs are an impure brackish water, though extremely transparent. Yet this district is almost exclusively the haunt of the Iguana. The occasional ones taken in the savannas are considered to be stray visitants from the neighbouring hills; they are not permanently established in the plains in which they are found.
" I have noticed the particular kind of locality which the Iguana inhabits in this part of the country, because it presents very different features from the haunts usually assigned to this lizard elsewhere. Forests on the banks of rivers, and woods around springs, where it passes its time in the trees and in the water, living on fruits, grains and leaves, are said to be the places in which the hunters find it on the American continent . . . . . . "

After referring to some notes of Sir R. Schomburgk made in Guiana, and to Goldsmith's graphic picture of noosing the Iguana, probably derived from Labat, which I do not here quote, because they refer to an animal generically distinct from ours,-my friend reverts to his own observations:-
"The gular pouch which hangs like the dewlap of a bull beneath its throat can be inflated*, but it is not exactly known under what circumstances, ordinarily, it has recourse to this power of inflation. When filled with air it would give breadth and buoyancy to the body, and if its habits are as aquatic as some accounts make them [those of Iguana proper] to be, it would afford to an herbivorous animal no unimportant aid while swimming and cropping ' its flowery food.' When excited it assumes a menacing attitude, and directs its eye to the object of attack with a peculiarly sinister look. At this time it inflates the throat, erects the crest and dentelations on the back, and opens the mouth, showing the line of those peculiarly-set white teeth, with serrated edges, so excellently made to illustrate the remains of the gigantic fossil Iguanodon. The principle of their construction is so precisely similar, as to leave no doubt of the genuine connexion of the extinct with the existing herbivorous lizard. The adaptation of both is for the cropping and cutting of vegetable food.
" In defending itself from attack, the Iguana converts its long flexible tail into no unimportant weapon. The dentelated upper edge, drawn rapidly over the body and limbs of an enemy, cuts like a saw. The twisted attitude which it assumes when approached is converted into a quick turn, in which movement the tail is nimbly struck by an overblow from one side to another, and then jerked

[^0]round. I have observed the same application of the tail to purposes of defence in the crocodile, and there can be little doubt that the dentelated crest upon this part of the body of lizards is for the infliction of serrated wounds. The lacerations which dogs suffer in attacking the Iguana are remarkably severe.
"There can be no doubt that the Iguana voluntarily takes to the water ; but whether it delights to refresh itself in that element, as we should be led to suppose by the observation that it sports in it, I cannot learn from any of our people here. The one kept in the Zoological Gardens in the Regent's Park was seen to enter and cross a small pond, the fore-feet being motionless during the animal's progress through the water. It is curious, however, that whilst the dry, sterile hills near us abound with Iguanas, the banks of the Rio Cobre, a river so near its haunts, are scarcely ever visited by them."

After my arrival in England, the above notes coming under review, in my study of the Saurians I had brought home, I was induced to make further inquiry of Mr. Hill, whether in describing the inflation of the pouch, and the defensive action of the tail, he spoke from his own observation. From his reply I extract the following remarks :-
"..... The purposes of defence, to which I represented it as applying its long tail with its armature of pointed and triple-edged scuta, were suggested to me by the negroes, who were present when I was examining the specimen I mentioned as forty-five inches in length. They warned me to stand out of the reach of its tail, for they saw it was going to turn itself rapidly round to strike. I observed a peculiar sinister look it had, derived not from the eye being turned within the socket, so as to indicate the object it was regarding, but from the peculiar turn of the head, as if listening and observing. The negroes remarked that in the position in which its tail then lay, it was preparing to strike at me, and that dogs generally in setting upon them received desperate punishment, from the gashes and lacerations that were made into the thick muscles of the legs by the rapid flinging round of the Iguana in defending itself. The sudden jerk with which it drew back its tail was said to enable it to rasp the very flesh off the bone. The notion expressed about the inflation of the gular pouch was the consequence of seeing two very large Iguanas from Cuba, which distended this appendage, and let it collapse again. The skin of these animals hung about them, as if they had been fat, and were, at the time I saw them, emaciated
" An acquaintance has promised to supply me with notes of a pair of Cycluras that inhabited a hollow acacia-tree in his fields (Prosopis julifora) for some sixteen months. He supposed them male and female. They differed in size and in tint; and were never, during the whole period of his acquaintance with them, seen on the outer tree both together. Like the pair of weather-indicators in the Dutchman's hygrometer, if one was out, the other was in. For a certain time every morning, one or other would be seen on some extreme eastern branch of the tree sunning itself, by basking at its length in the slant sunbeams that shot within the foliage. Their size and the nimble movement of the tail gave them so much the
appearance of the ring-tailed monkey, when climbing, that a nearsighted observer, like myself, would mistake them for some Sapajou scrambling up the bark."

The intelligence thus promised has just been communicated to me, contained in the following letter from Stephen Minot, Esq., of Worcester Lodge, to Richard Hill, Esq.

$$
\text { " February } 1848 .
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"Dear Sir,-In nccordance with your request, I send you a few particulars relative to the two Guanas that were seen during a period of nearly two years, at Worcester Lodge, in the parish of St. Catherine.
"About the beginning of September 1844, a friend of mine, riding into the property, observed, as he thought, a large green lizard basking in the sun on a hollow cashaw-tree (Prosopis juliflora), close by the road. He struck at it with his riding-whip, and immediately the animal disappeared with great swiftness into the tree. For several weeks after this it was occasionally seen, but was extremely shy, always disappearing the moment any one approached the tree. I gave orders that no one should, under any pretence, frighten it again, as a servant who had seen it informed me it was a Guana. By degrees it got tamer; and when I first saw it, it was, I should think, from 10 to 11 inches long, including the tail. About a year after this period it was always visible as soon as the sun became a little warm, clinging to the bark of the tree, or crouching (if I may use the term) along a small dry branch. I never saw it attempt to catch flies, or ants, or any insects; and the only time I ever detected it feeding was about this period. One day after heavy rain, the sun having broken through the clouds, shining very bright, it was then eating the guinea-hen-weed (Petiveria), growing about ten yards from the root of the cashaw. I watched it a few moments, unperceived, and observed it walk very slowly, moving one leg at a time, -cropping, and apparently swallowing without any further process, a mouthful of leaf; and leaving an indenture on the plant of the size of his mouth. Immediately on seeing me, by a succession of rapid springs, neither running nor walking, nor was it like the hopping of the frog, it regained the tree, and in a second was out of sight. The hollow part of the tree is about seven feet from the ground. It evidently did not object to the water, as there was a small lodgement of water close by where it was feeding, through which it bounded without a moment's hesitation, though it might have regained the tree, if it had disliked the water, by going round the small swamp, which was only say three or four yards in diameter. I mention this circumstance of the water, as we had previously had dreadful dry weather, and I often wondered how the animals of this description lived for want of it ; and it was never visible during or immediately after rain.
" It was, as you are aware, foolishly shot, in my absence, by young N ——, under the false impression that it ate chickens. I have spoken of it in the singular number, as we were not aware there were two, until Mr. N - shot a second one on the same tree about
two or three hours after he killed the first. This discovery, that there were two instead of only one, accounted for what had previously often surprised me, namely that sometimes the animal was of a brownish-green hue, and when of that colour always appeared larger than when it looked blackish. It therefore appears plain that they must have been male and female; and, if that is correct, the male was by far the larger and handsomer.
" I'he male, as I consider it, was the one I saw dead after it was shot. It was about from 22 to 24 inches long, but the tail did not appear so long in proportion, as it grew older, as it seemed when first discovered. I opened the animal, and found it full of pieces of guinea-hen-weed, some digested, some half-digested, and a large quantity quite fresh, which is accounted for by its being early in the morning, say nine o'clock, when it was shot. I may mention that I put the carcass into three or four different sorts of ants' nests, - the common, the stinging black, and the large red ant, -not one of which would touch it; and when I forced them into the carcass, and put part of their nests in it, they ran away from it as quickly as possible. I did this under the hope of getting his skeleton."

To this last observation Mr. Hill has appended the following note : -"This dislike for the flesh of the lizard may have resulted from the odour of the guinea-hen-weed, on which it had recently fed. The whole flesh would be imbucd with the intolerable garlic-like scent."
2. Descriptions of twenty-three new species of Vitrina, from the Collection of H. Cuming, Esq. By Dr. L. Pfeiffer.

1. Vitrina Cumingii, Beck MSS. Vitr. testa depresso-globosd, tenuissima, subtiliter striata, nitidd, albido-corned; spira brevissimd, obtusd; suturd levi, lined impressd marginatd; anfractibus 4 vix convexiusculis, ultimo inflato, subdepresso, medio lined rufa cingulato; aperturd parùm obliqud, lunato-rotundata; peristomate simplice, marginibus remotis, columellari subverticali, leviter arcuato, supernè reflexiusculo, perforationem punctiformem simulante, supero antrorsum vix arcuato.
Diam. 20, altit. 12 mill.
Hub. The island of Bohol ; collected by Mr. Cuming.
2. Vitrina margarita, Beck MSS. Vitr. testd depresso-glo. bosá, tenuissima, striatula, nitidd, pellucidd, carneo-hyalind; spira parvula, planiuscula; suturd lineari; anfractibus $3 \frac{1}{2}$ subplanis, rapidè accrescentibus, ultimo magno; inflato; apertura obliquá, lunato-subcirculari; peristomate tenuissimo, margine supero antrorsum dilatato, columellari leviter arcuato.
Diam. 14 , altit. 8 mill.
Hal. The island of Guimaras; collected by Mr. Cuming.
3. Vitrina smaragdulus, Beck MSS. Vitr. testa depressiuscula, tenui, vix striatula, non nitente, diaphand, aureo-virente; spira parvuld, planiuscula ; suturd leviter impressa, angustissimè marginata; anfractibus $3 \frac{1}{2}$ planiusculis, rapidè accrescentibus, ultimo
utrinque planiusculo, basi lato; apertura parùm obliqua, rotun-dato-lunari, latiore quam altd; peristomate tenui, subinflexo, margine supero antrorsum dilatato, columellari vix recedente, leviter arcuato.
Diam. 12, altit. 7 mill.
Hab. The island of Negros; collected by Mr. Cuming.
4. Vitrina bicolor, Beck MSS. Vitr. testa subglobosa, tenui, sublavigata, nitidissima, carneo-albida; spira brevi, convexa, obtusd ; suturd impressd; anfractibus $3 \frac{1}{2}$ rapidè accrescentibus, ultimo inflato, anticè hyalino, basi angustiusculo, membranaceomarginato; apertura vix obliqua, lunato-rotundata; peristomate tenuissimo, margine dextro regulariter rotundato, columellari recedente, perarcuato.
Diam. 18, altit. 10 mill.
(Body of the animal white, apex black.)
Hab. Isle of Guimaras; collected by Mr. Cuming.
5. Vitrina guimarasensis, Pfr. Vitr. testa depresso-semiglobosd, tenui, striatula, subdiaphand, virenti-carnea; spira parvulda, parùm elevatd; sutura marginatd; anfractibus vix 4 subplanis, rapidissimè accrescentibus, ultimo inflato, subdepresso; apertura obliqud, lunato-subcirculari, aquè alta ac latd, intus submargaritaced; peristomate tenuissimo, margine dextro regulariter arcuato, columellari recedente, perarcuato.
Diam. 15, altit. 8 mill.
Hab. Isle of Guimaras; collected by Mr. Cuming.
6. Vitrina Beckiana, Pfr. (Vitr. perafinis, Beck MSS.) Vitr. testa depresso-ylobosa, circuitu ovali, tenuissima, striatula, pellucidd, nitidd, pallidissimè rubello-corned; spira mediocri, brevi, obtusa; anfractibus ferè 4 vix convexiusculis, celeriter accrescentibus, ultimo subdepresso, basi lato; aperturâ parìm obliqua, lunato-rotundatá, latiore quam alta; peristomate simplice, marginibus remotis, supero regulariter arcuato, columellari supernè reflexiusculo, basi recedente, perarcuato.
Diam. 16, altit. 8 mill.
Hab. The Philippine islands of Negros, Siquijor and Guimaras; collected by Mr. Cuming.
7. Vitrina politissima, Beck MSS. Vitr. testa globoso-depressá, solidula, levigatâ, politissima, diaphand, corned, saturatius radiatd ; spira mediocri, convexd; sutura impressa, submarginata; anfractibus 4 convexiusculis, celeriter accrescentibus, ultimo de-presso-rotundato, basi lato; aperturá obliqua, lunato-rotundata, equè alta ac lata; peristomate simplice, margine superiore antrorsum arcuato, columellari leviter arcuato.
Diam. 14, altit. $7 \frac{1}{2}$ mill.
From the island of Zebu ; collected by Mr. Cuming on the leaves of small trees. The entire animal is black.
8. Vitrina leytensis, Beck MSS. Vitr. testí depressá, circuitu ovali, tenuissima, lavigata, nitidissima, lutescenti-carned; spira
planiusculd, vix elevata; sutura leviter impressa; anfractibus 3 rapidè accrescentibus, ultimo supernè subplano, basi convexiore, latiusculo ; apertura parùm obligua, rotundato-lunari, latiore quam ultd; peristomàte tenuissimo, margine supero parùm arcuato, columellari supernè reflexiusculo, basi cum inferiore angulum obtusum formante.
Diam. 13, altit. 7 mill.
From the island of Leyte. A larger variety, more opake, yellow-ish-whitish, from Siquijor. Collected by Mr. Cuming.
9. Vitrina gutta, Pfr. Vitr. testa depresso-globosá, tenuissimd, glaberrima, nitidissimd, hyalind; spira vix elevatiusculd; suturd lineari, angustè marginata; anfractibus $3 \frac{1}{2}$ planiusculis, rapidè accrescentibus, ultimo magno, depresso-rotundato, basi latiusculo; aperturd parìm obliqud, lunato-circulari; peristomate simplice, undique regulariter arcuato, margine columellari intrante, supernદ̀ reflexiusculo.
Diam. 11, altit. 6 mill.
From Sorsogon, isle of Luzon; collected by Mr. Cuming.
10. Vitrina rufescens, Pfr. Vitr. testa depresso-globosd, tenuissima, plicatuld, nitidd, pellucidâ, rufescente; spira breviter conoidea, obtusiuscula; suturá impressa ; anfractibus ferè 4 convexiusculis, celeriter accrescentibus, ultimo ventroso ; aperturd vix obliqud, lunato-subcirculari; peristomate tenui, subinflexo, marginibus remotis, supero regulariter, columellari leviter arcuato.
Diam. 13, altit. 8 mill.
From the isle of Mindoro; collected by Mr. Cuming.
11. Vitrina crenularis, Beck MSS. Vitr. testa depressa, tenuissima, glabrd, nitidd, pellucidd, aurea; spirâ pland ; suturd leviter impressd ; anfractibus $3 \frac{1}{2}$ planiusculis, juxta suturam plicatocrenulatis, rapidè accrescentivus, ultimo depresso, basi lato ; aperturd obliqud, rotunduto-lunari, latiore quam alta; peristomate tenui, subinflexo, margine supero antrorsum dilatato, columellari leviter arcuato, basali strictiusculo.
Diam. 13, altit. 7 mill.
From the Philippine islands of Negros and Zebu; collected by Mr. Cuming.
12. Vitrina resiliens, Beck MSS. Vitr. testd depressa, tenuissimá, subtilissimè et confertim plicatuld, nitidd, pellucidd, virentistramined; spira planiusculd; suturd leviter impressa; anfractibus $3 \frac{1}{2}$ subplanis, ultimo lato, depresso, basi ferè omninò membranaceo; apertura obliqud, lunato-ovali; peristomute simplicissimo, margine columellari statim procedente, leviter arcuato.
Diam. 11, altit. $6 \frac{1}{2}$ mill.
From Sibonga, island of Zebu. Found on leaves of small palms in dark woods. The body of the animal is white, the apex black (H. Cuming).
13. Vitrina papillata, Pfr. Vitr. testa depressd, tenui, laviusculd, nitidd, pellucidd, pallidè corned; spirá planiuscula, medio
papillata; sutura profundè impressa, marginata; anfractibus $3 \frac{1}{2}$ convexiusculis, prope suturam striatulis, ultimo depresso, lineis obsoletis spiralibus interdum sculpto, peripherid rotundato, basi latiusculo; aperturd perobliqua, ampla, rotundato-lunari, latiore quam altd; peristomate tenui, margine supero antrorsum dilatato, columellari recedente, perarcuato.
Diam. 10, altit. 5 mill.
From Calauang, isle of Luzon ; collected by Mr. Cuming.
14. Vitrina planulata, Pfr. Vitr. testd depressissima, subdiscoided, leviusculd, nitidd, carned ; spira planiusculd; suturd impressa; anfractibus 3 vix convexiusculis, rapidissimè accrescentibus, ultimo depresso, basi angusto ; apertura amplissima, perobliqua, lunari, transversè dilatata; peristomate tenui, margine supero antrorsum dilatato, columellari valdè recedente, arcuato.
Diam. 11, altit. $4 \frac{1}{2}$ mill.
From Calauang, isle of Luzon; collected by Mr. Cuming.
15. Vitrina aperta, Beck MSS. Vitr. testa depressissima, supernè convexiusculd, basi aperta, lavigatd, subopaca, virentialbida; spira minuta, laterali; suturd levi; anfractibus $2 \frac{1}{2}$ convexiusculis, basi angustissimis, apertis, ultimo permagno, planè fornicato; apertura horizontali, auriformi, usque in verticem aperta; peristomate simplicissimo.
Diam. 11, altit. 3 mill.
From San Juan, isle of Luzon; collected by Mr. Caming.
16. Vitrina monticola, Benson MSS.? Vitr. testa depressa, tenui, striatula, nitidd, pellucida, lutescenti-cornea; spira plana, medio vix prominula; sutura leviter impressa; anfractibus 4 celeriter accrescentibus, planiusculis, ultimo depresso, non descendente; apertura obliqua, rotundato-lunari; peristomate simplice, marginibus conniventibus, callo tenuissimo junctis, supero antrorsum arcuato-dilatato, co'umellari cum basali angulum obtusum formante.
Diam. 18, altit. $7 \frac{1}{2}$ mill.
From Bengal, Landour, Himalayah, Almorah.
17. Vitrina Bensoni, Pfr. Vitr. testa depressiusculá, tenui, striatula, nitidd, pellucida, pallidè cornea; spira vix elevatá, obtusá; sutura impressa, submarginata; anfractibus $3 \frac{1}{2}$ convexiusculis, ultimo subdepresso, peripherid rotundato, basi lato; upertura obliqua, lunato-subcirculari; peristomate simplice, subinflexo, marginibus conniventibus, supero antrorsum subdilatato, columellari recedente, perarcuato.
Diam. 12, altit. vix 6 mill.
In the Botanic Garden of Calcutta; collected by Mr. Benson.
18. Vitrina mians, Rüppell MSS. Vitr. testa depresso-globosa, tenui, striatula, pellucidd, nitidula, pallidè cornea, strigis saturatioribus radiata\}? spird parvula, conoideo-convexd; suturd impressd, marginatd; anfractibus 4 convexiusculis, rapidè accrescentibus, ultimo rotundato, busi latiusculo; apertura obliqud, lunato-subcir-
culari; peristomate simplice, marginibus convergentibus, columellari subrecedente, leviter arcuato.
Diam. 24, altit. 12 mill.
From Abyssinia; collected by Dr. Rüppell.
19. Vitrina Rüppelliana, Pfr. Vitr. testa subsemiglobosa, tenui, arcuato-striata, pellucidd, parùm nitida, fulva; spird brevi, obtusiusculd ; sutura impressa; anfractibus 3 convexiusculis, rapidè accrescentibus, ultimo ventroso, basi latiusculo ; aperturd obliqua, lunato-rotundatd; peristomate simplice, margine supero ferè angulatim antrorsum dilatato, columellari substrictè recedente, basi leviter arcuato; margine interno anfractuum inconspicuo.
Diam. 18, altit. 10 mill.
From Abyssinia; found by Dr. Rüppell.
20. Vitrina Sowerbyana, Pfr. Vitr. testa depressa, subauriformi, arcuatim plicatula, tenuissima, nitida, pellucida, brunneofulva; spirá vix emersd; sutura profundè impressd; anfractibus 3, primis convexiusculis, ultimo depresso, peripheria angulato, basi convexiore; apertura ampla, perobliqua, lunato-ovali, marginibus conniventibus, supero vix dilatato, columellari perarcuato, angustè membranaceo-marginato ; margine interno anfractuum inconspicuo.
Diam. 22, altit. 11 mill.
From West Africa.
21. Vitrina grandis, Beck MSS. Vitr. testa depressa, tenuiusculd, radiatim subtiliter plicatuld, diaphand, non nitente, albidostramined; spira brevissima, vix emersa, subpapillata; suturd impressa; anfractibus $3 \frac{1}{2}$ rapidè accrescentibus, subplanatis, ultimo depresso, peripheria obsoletè angulato, basi lato, striatulo, nitido; aperturd parùm obliqua, latd, lunari; peristomate simplice, margine supero antrorsum subdilatato, columellari subverticaliter descendente, arcuatim in basalem abiente.
Diam. 18, alt. 8 mill.
From West Africa, Guinea.
22. Vitrina abyssinica, Rüppell MSS. Vitr. testd depressoovatd, sublavigatd, diaphand, vix nitidulá, sordidè virenti-corned; spira brevi, convexiusculd; sutura leviter impressa; anfractibus $2 \frac{1}{2}$ convexiusculis, celeriter accrescentibus, ultimo peripherid rotundato, basi latiusculo ; apertura obliqua, rotundato-lunari, transversè dilatatd; peristomate simplice, margine supero subrepando, columellari recedente, arcuato.
Diam. 10, altit. $5 \frac{1}{2}$ mill.
From Abyssinia; collected by Dr. Rüppell.
23. Vitrina virens, Pfr. Vitr. testa depressiuscula, subsemiovali, subtilissimè striatula, nitidula, corneo-virente ; spira planiusculd; suturd vix impressd; anfractibus 3 vix convexiusculis, rapidè accrescentibus, ultimo subdepresso-rotundato, basi angustè mem-branaceo-marginato; apertura obliqua, lunato-subcirculari; peristomate tenui, subinflexo, undique regulariter arcuato.
Diam. 16, altit. 8 mill.
Locality unknown.

[^0]:    * I believe my friend has fallen into a common error here. If I may judge from analogy in the genera Anolis and Dactyloa, the gular pouch in the Iguanidee is extensible but not inflatable, as I hope to show in a future paper on the habits of these genera.-P.H.G.

